REMARKS

These drawings have been explained in the Amendment and Response dated January 13, 2003 (Paper #9, Page 5).

The Examiner has rejected claims 1, 4, 6, 8, 10, 12, 13, 17 and 21 under 35 USC §103(a) over *Kessler et al* (5,610,932) in view of *Mifune et al* (4,377,635) further in view of *Herkstroeter* (4,933,948). All of the claims in the application (claims 1-22) claim a "mirrorless laser. *Kessler et al* discloses a laser with two mirrors as illustrated in Fig. 1 of his patent by the numbers 20 and 22. In contrast Applicant's invention does not require the use of any mirrors. This is clearly shown in Fig. 1 of Appliant's drawings. *Kessler et al* makes clear in other places in their patent that mirrors are rquired. For example the Abstract states that the "host is aligned within a lasing cavity." It is well recognized in the art of lasers that a cavity means that there are two mirrors forming the cavity. *Kessler* also states that "a 532 nm second harmonic of a Nd-YAG laser can be mildly focused to pump a R6G doped solid matrix within an optical resonator." Col. 4, line 60-63. It is also well understood in the laser art that the term "optical resonator" means that there are two mirrors forming the resonator. *Kessler et al* does not disclose or suggest a "mirrorless" laser. Consequently, *Kessler et al* in combination with *Mifune et al* and *Herkstroeter et al* does not render Applicant's invention obvious.

Applicant has invented a mirrorless laser using the dipolar organic molecular salts defined in the claims. The dipolar organic molecular salt used by Applicant only requires a very low threshold pump pulse energy (less than 1 μJ, and has a high energy conversion efficiency (e.g. 40%). Specification page 16 lines 12-14. Applicant has invented a laser that produces "mirrorless" laser emissions. It was unexpected that these dipolar organic molecular salts could produce highly efficient laser emissions at low thresholds without the use of external mirrors. These laser emissions are produced where the active material is contained in a typical dye cell. Specification, Page 11, lines 8-9. The active media used in conventional lasers must have a very high photoluminescence quantum efficiency. The most widely used laser dyes for conventional lasers have high photoluminescence efficiencies. Quite unexpectedly, Applicant's dipolar organic molecular salts produce mirrorless laser emissions with a very high efficiency at low threshold excitation despite relatively low photoluminescence quantum efficiencies.

Specification, Page 11, line 21 to Page 22, line 4. Applicant's laser is very inexpensive to produce and is very useful for short laser pulses. Specification, Page 17 line 6-7.

Mifune et al simply discloses a "photographic light-sensitive material." Abstract, line 1. *Mifune et al* does not appear to have any relevancy to lasers.

Herkstroeter et al discloses solutions useful in dye lasers but does not disclose that these solutions can be used to produce mirrorless emissions. Even the combination of the three references does not result in Applicant's mirrorless laser. Furthermore, the compounds in *Mifune et al* and *Herkstroeter et al* are very different from the compounds disclosed in *Kessler et al* and there is nothing to suggest the substitution of the alkyl group in the general equation of *Kessler et al.*

In respect to claims 2 and 13, the combination of the three references does not disclose or suggest the use of dipolar organic molecular salts of the formula defined in Applicant's claims to produce a mirrorless laser.

Claims 3 and 14 have been rejected on the basis of these three references further in view of *Carrig et al* which discloses the DAST formula. Combining these references with *Kessler et al* does not result in Applicant's mirrorless laser as *Kessler et al* requires two mirrors.

Claims 5 and 16 have been rejected on the same three references and *Thakur*. The combination of references does not result in a mirrorless laser. *Kessler et al* requires two mirrors as stated above.

Claim 7 and 18 have been rejected on the basis of the same references in view of *Ashkin et al* who discloses the use of a matrix of polymethylmethacrylate. Col. 7, lines 1-6. This combination also does not result in Applicant's invention as *Kessler et at* requires the use of two mirrors.

Claim 9, 11, 20, and 22 have been rejected on the basis of these same references in view of *Wada et al. Wada et al* discloses that the optical part of an optical thin film may be potassium dihyrogenphosphate or ß-barium borate. Col. 3, lines 37-43.. Again, this combination does not disclose a mirrorless laser.

CONCLUSION

In conclusion, it is believe that all of the claims are patentable as the combination of prior art does not disclose that the use of compounds of the formula defined in Applicant's claims can produce mirrorless laser emissions. An early allowance of all the claims is respectfully requested. If the Examiner wishes to discuss this Application with the undersigned, please contact the undersigned at the telephone number listed below.

Respectfully submitted,

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